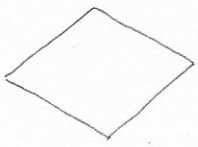
Math 367 In-class Assignment 10

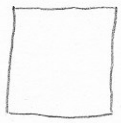
Name Solutions

- Let $f : \mathbb{R}^2 \to \mathbb{R}^2$ be the dilation with center $(-2, -2)$ and scaling factor 2. Let T be the triangle with vertices $(0, 6)$, $(2, 0)$, $(4, 6)$ and let Q be the upper half of the circle with center $(0, 2)$ and radius 1. On graph paper, plot T, Q, $f(T)$ and $f(Q)$.

- Do **Problem 122**: Show that Theorem 120 is not true if we replace "triangle" by "quadrilateral". That is, find two quadrilaterals whose sides are proportional that are not similar.

Any rhombus has sides proportional to any other rhombus, so e.g.



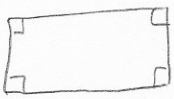


(a rhombus whose angles are not right angles, and a square)

There are also examples given by parallelograms and rectangles.

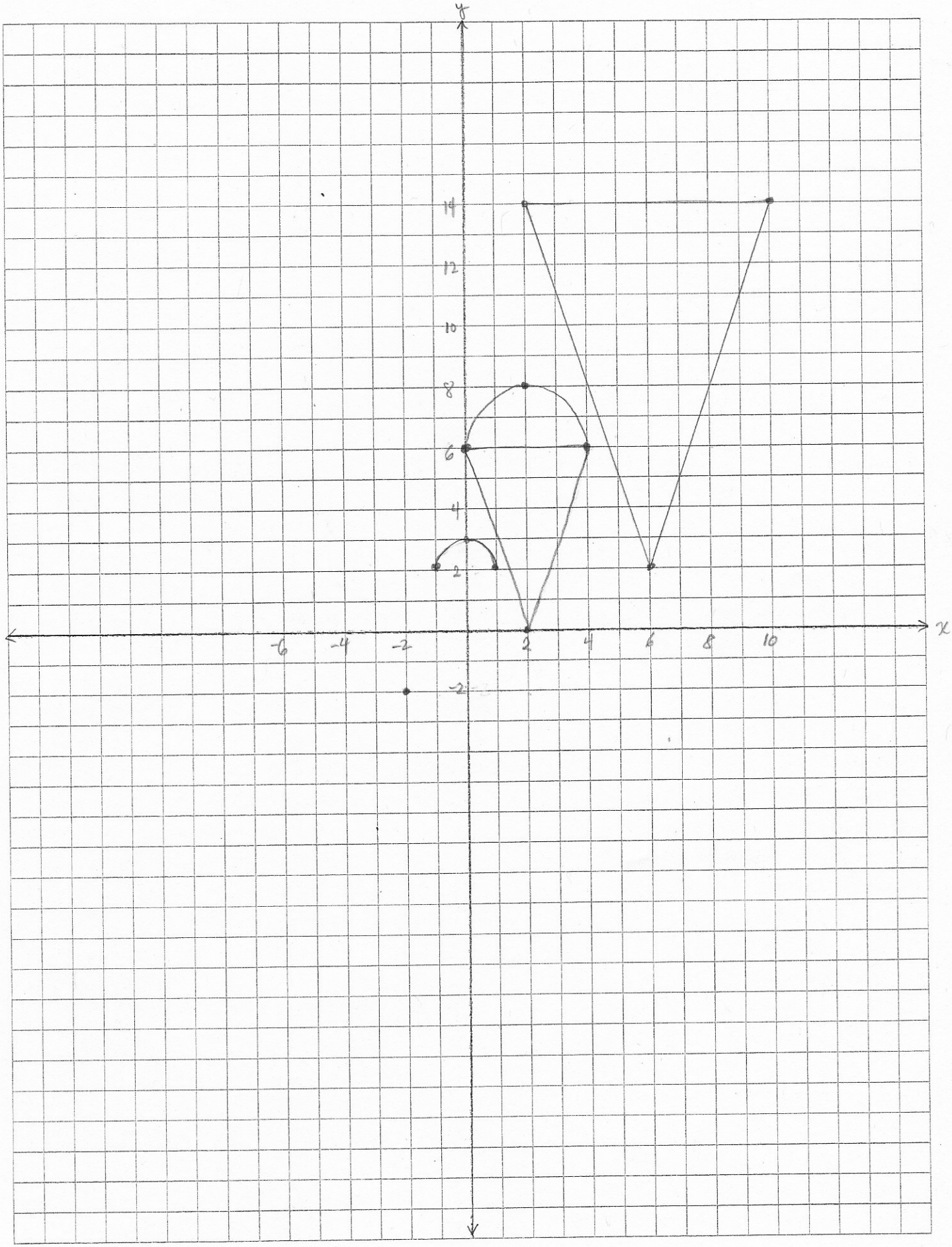
- Do **Problem 124**: Show that Theorem 123 is not true if we replace "triangle" by "quadrilateral". That is, find two quadrilaterals whose corresponding angles are congruent that are not similar.

Any two rectangles have corresponding angles congruent, so e.g.



(a rectangle that is not a square, and a square)

There are also examples given by parallelograms.


y
x
14
12
10
8
6
4
2
-2
-6
-4
-2
2
4
6
8
10